

Fig. 1

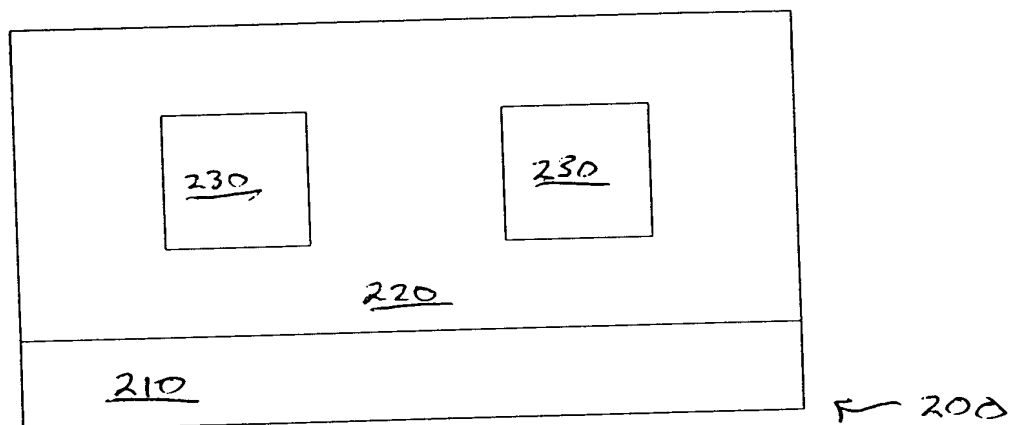


Fig. 2

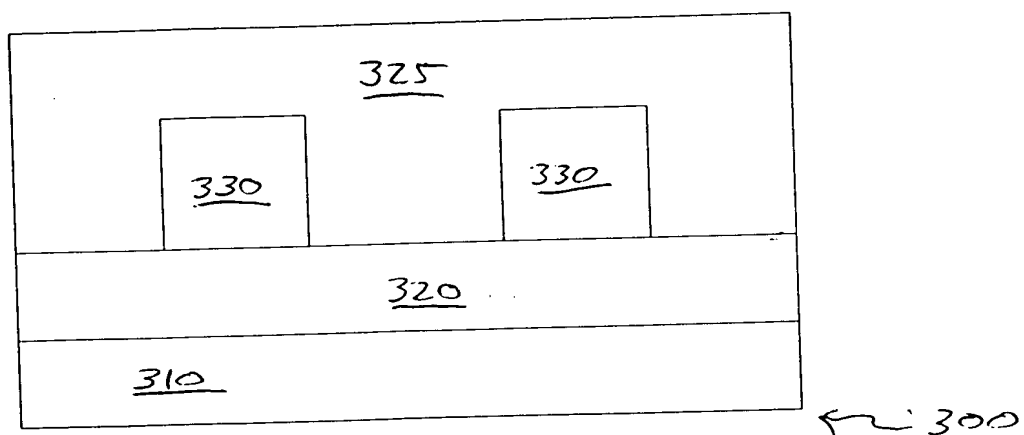
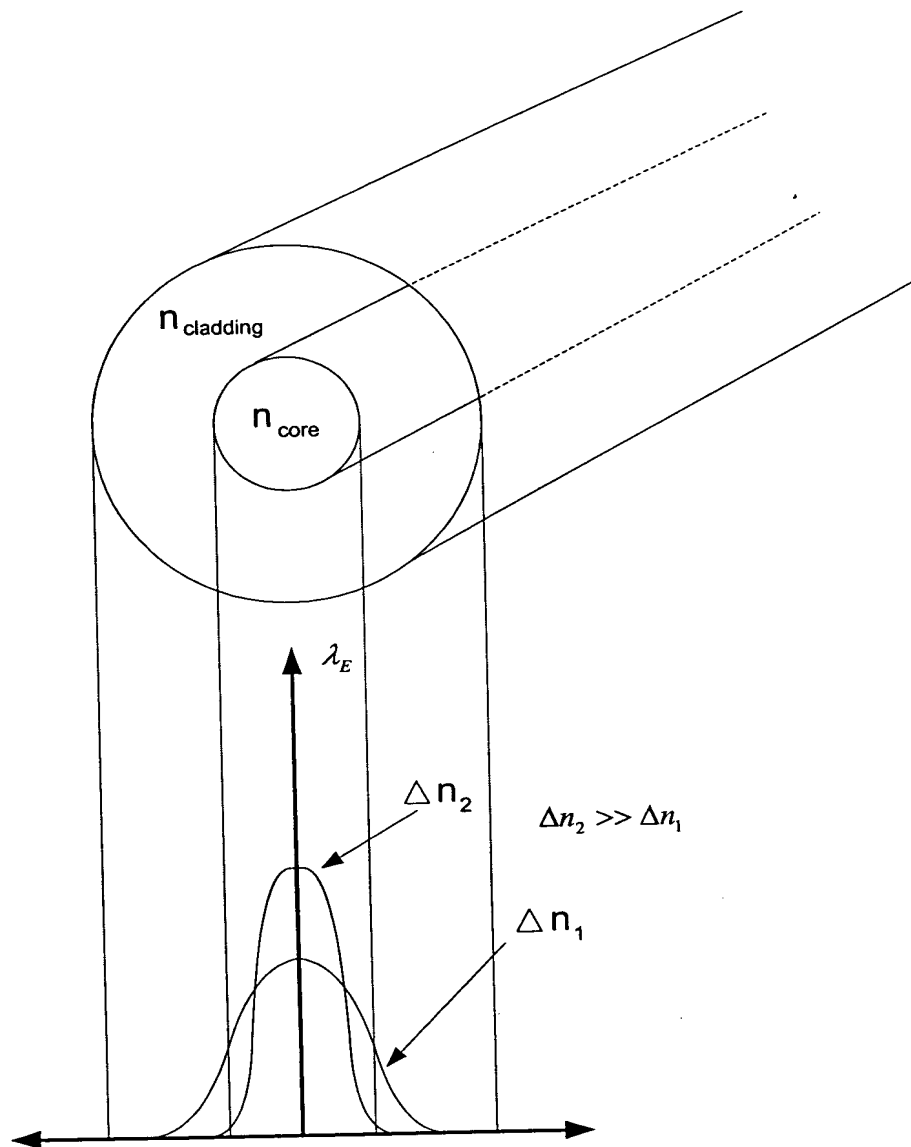


Fig. 3



**Fig. 4**

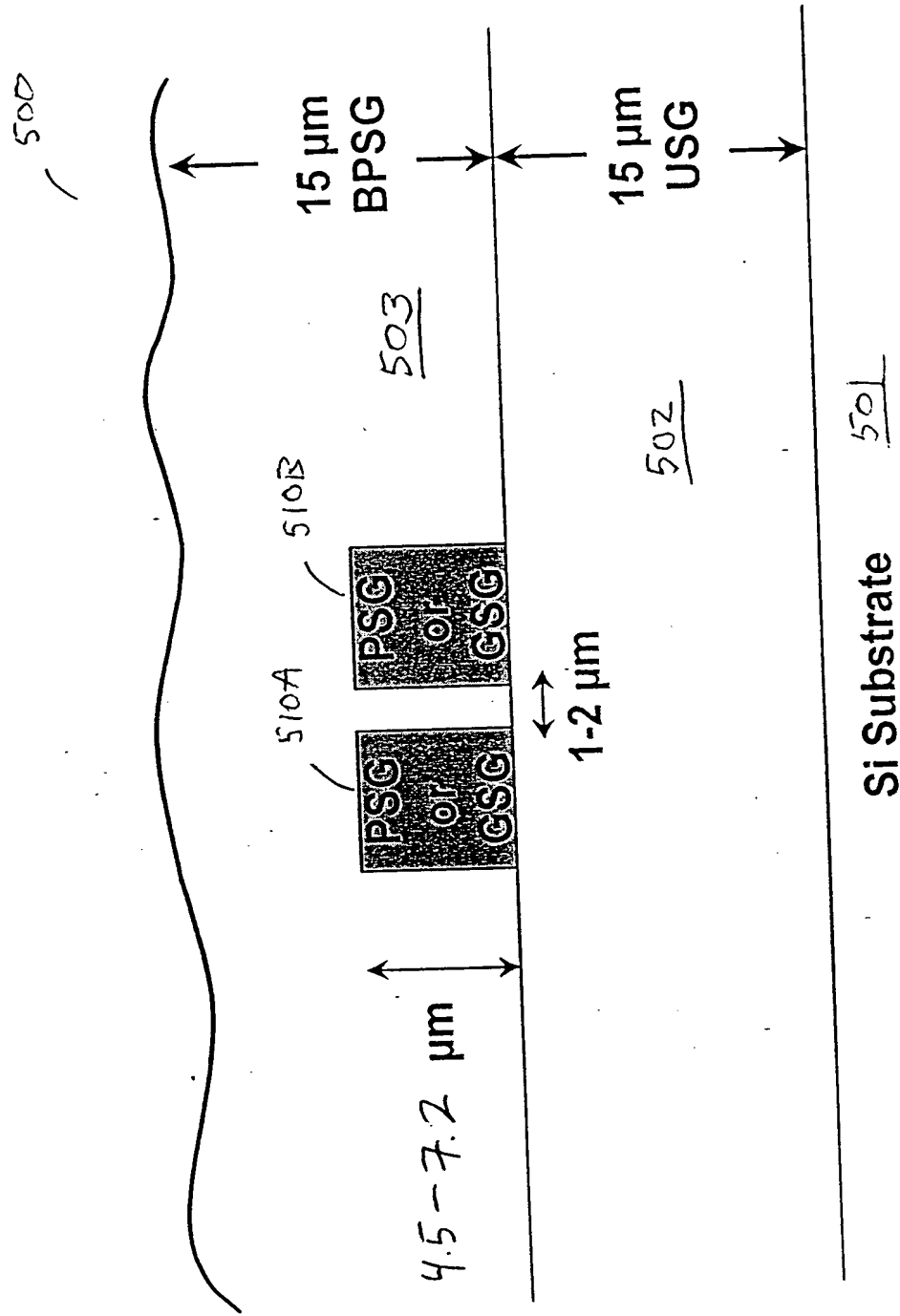


Fig. 5

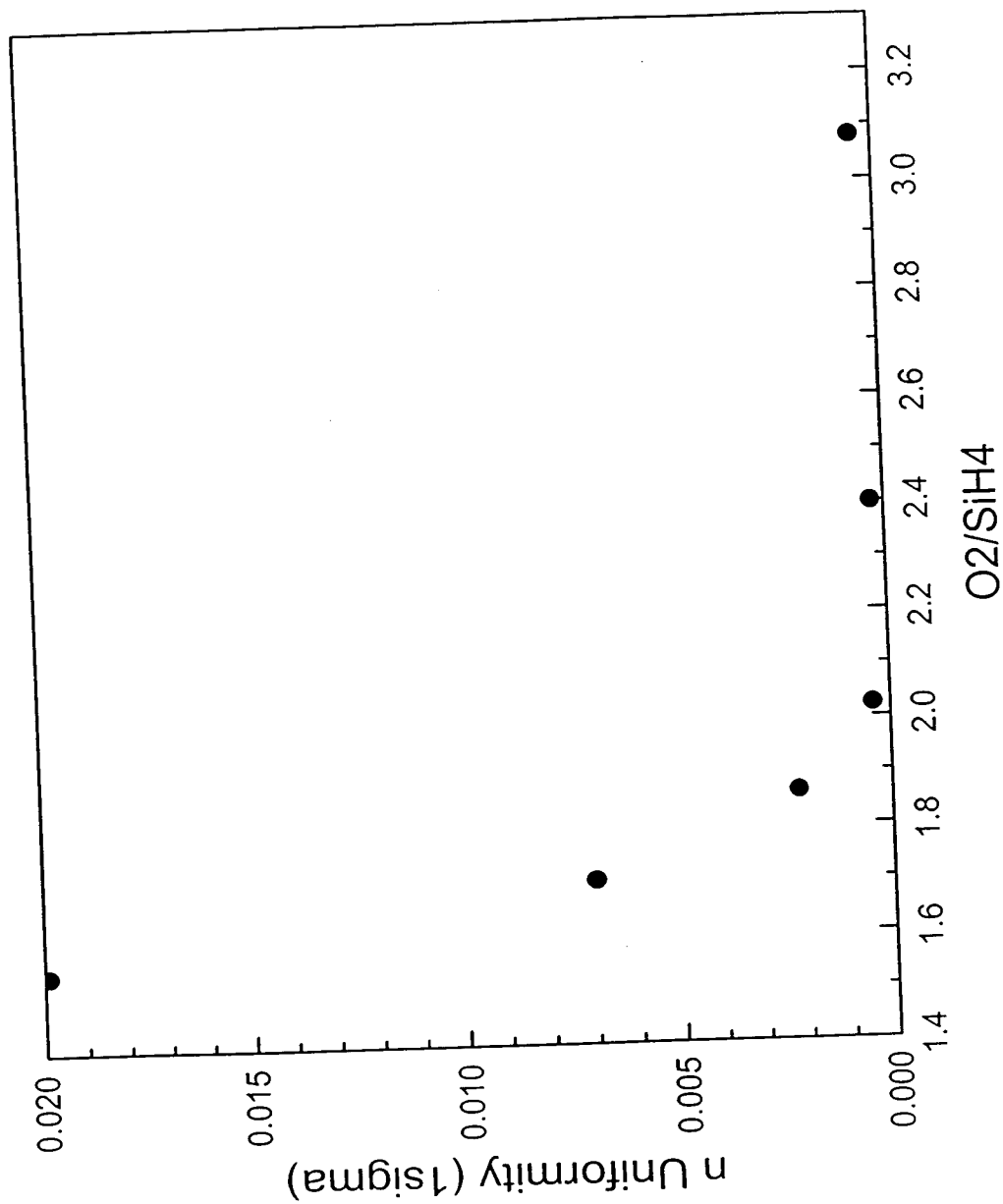
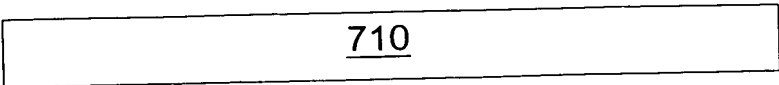
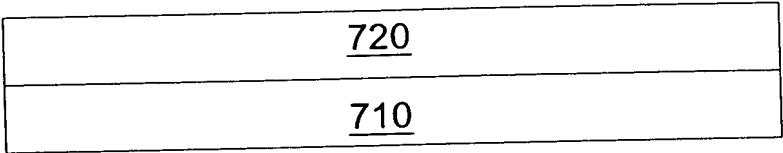


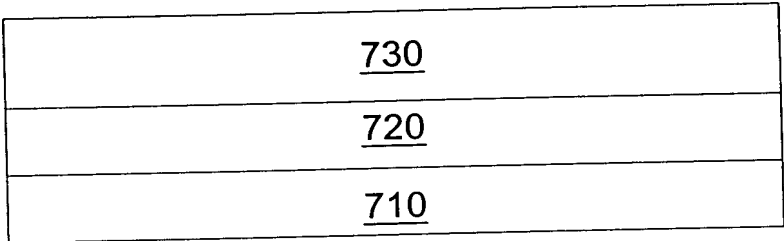
Fig. 6



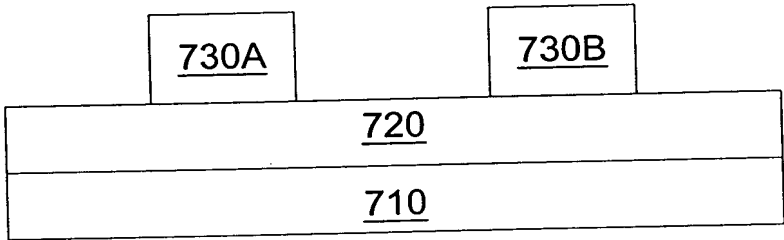
**Fig. 7A**



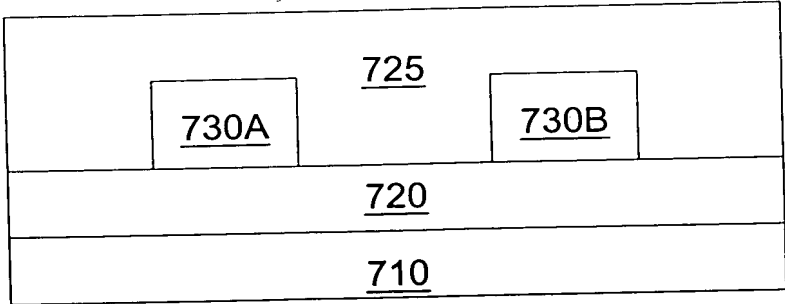
**Fig. 7B**



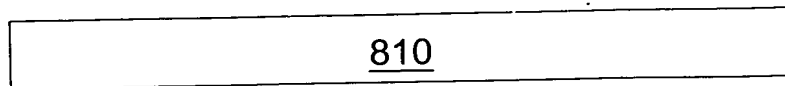
**Fig. 7C**



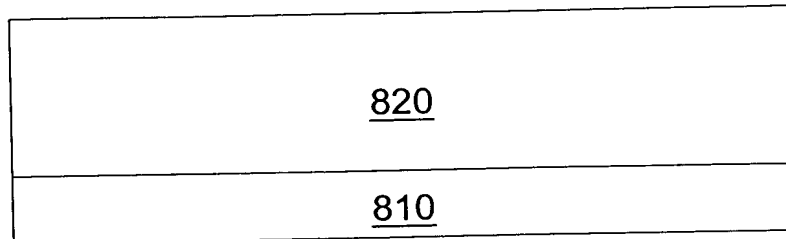
**Fig. 7D**



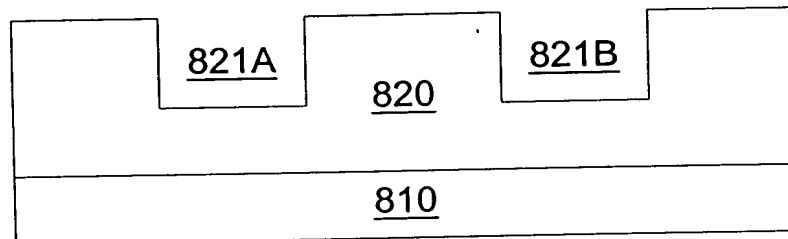
**Fig. 7E**



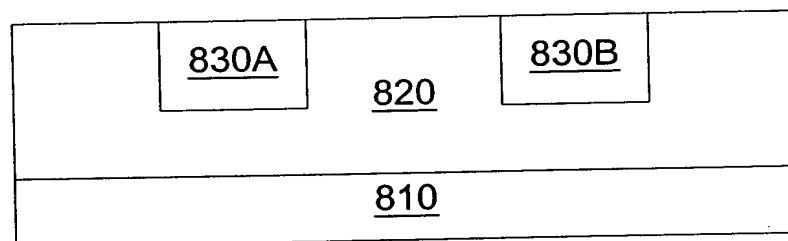
**Fig. 8A**



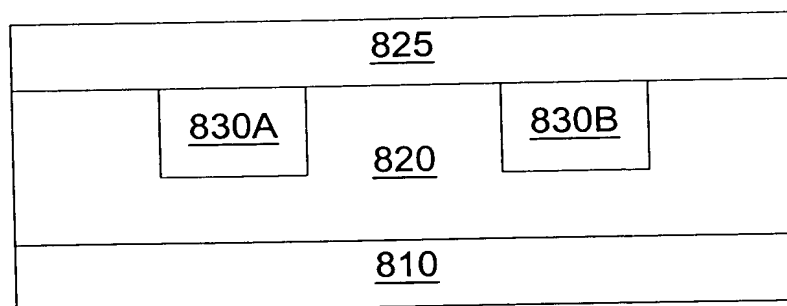
**Fig. 8B**



**Fig. 8C**



**Fig. 8D**



**Fig. 8E**

Figure 9 shows a cross-sectional view of a semiconductor device structure. The structure is built on a Si Substrate. The substrate is oriented with the 100 face (indicated by a wavy line) and the 111 face (indicated by a horizontal line). The structure consists of a 7 μm BPSG layer, a 3 μm USG layer, and a 1 μm SiON layer. The SiON layer is divided into two regions, 910A and 910B, which are separated by a 2-3 μm gap. The SiON layer is oriented with the 100 face (indicated by a wavy line) and the 111 face (indicated by a horizontal line).

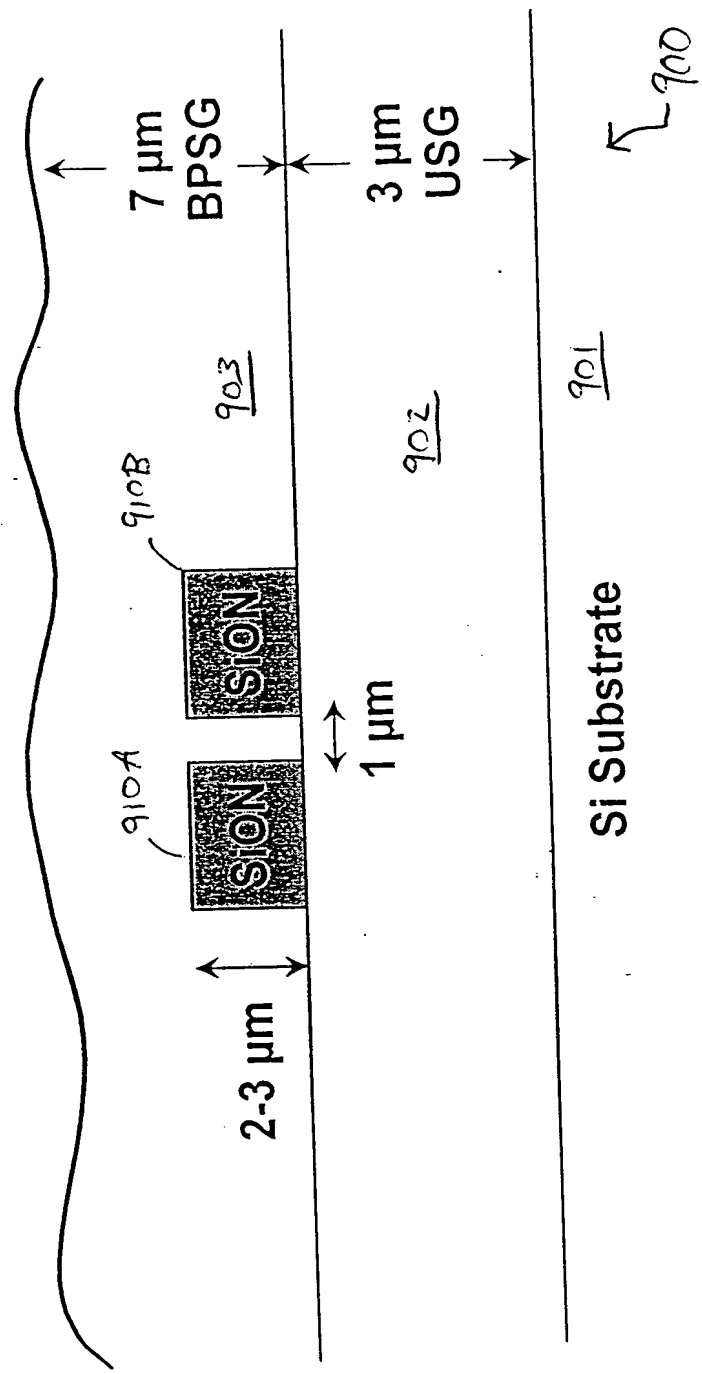


Fig. 9





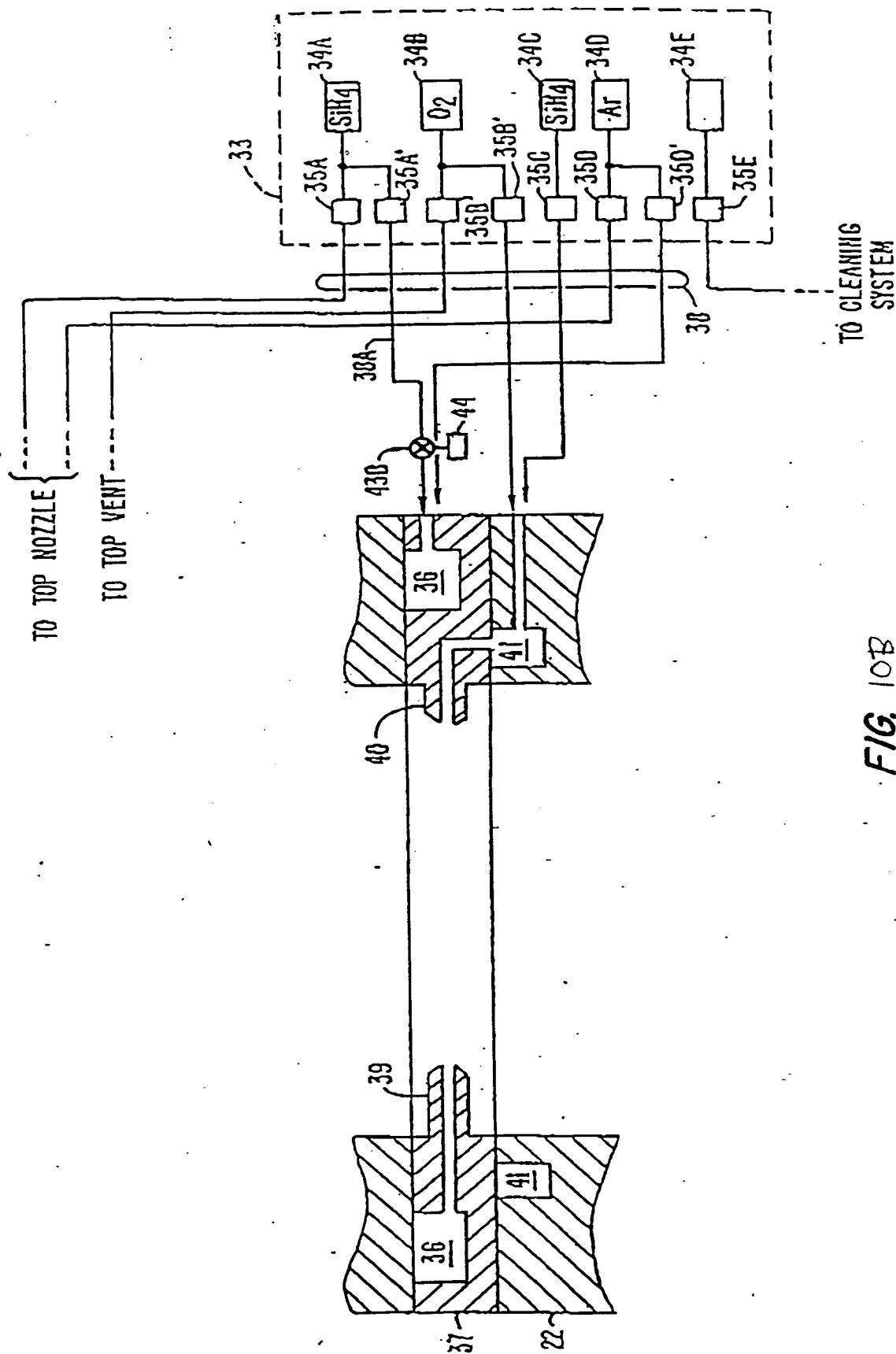


FIG. 10B

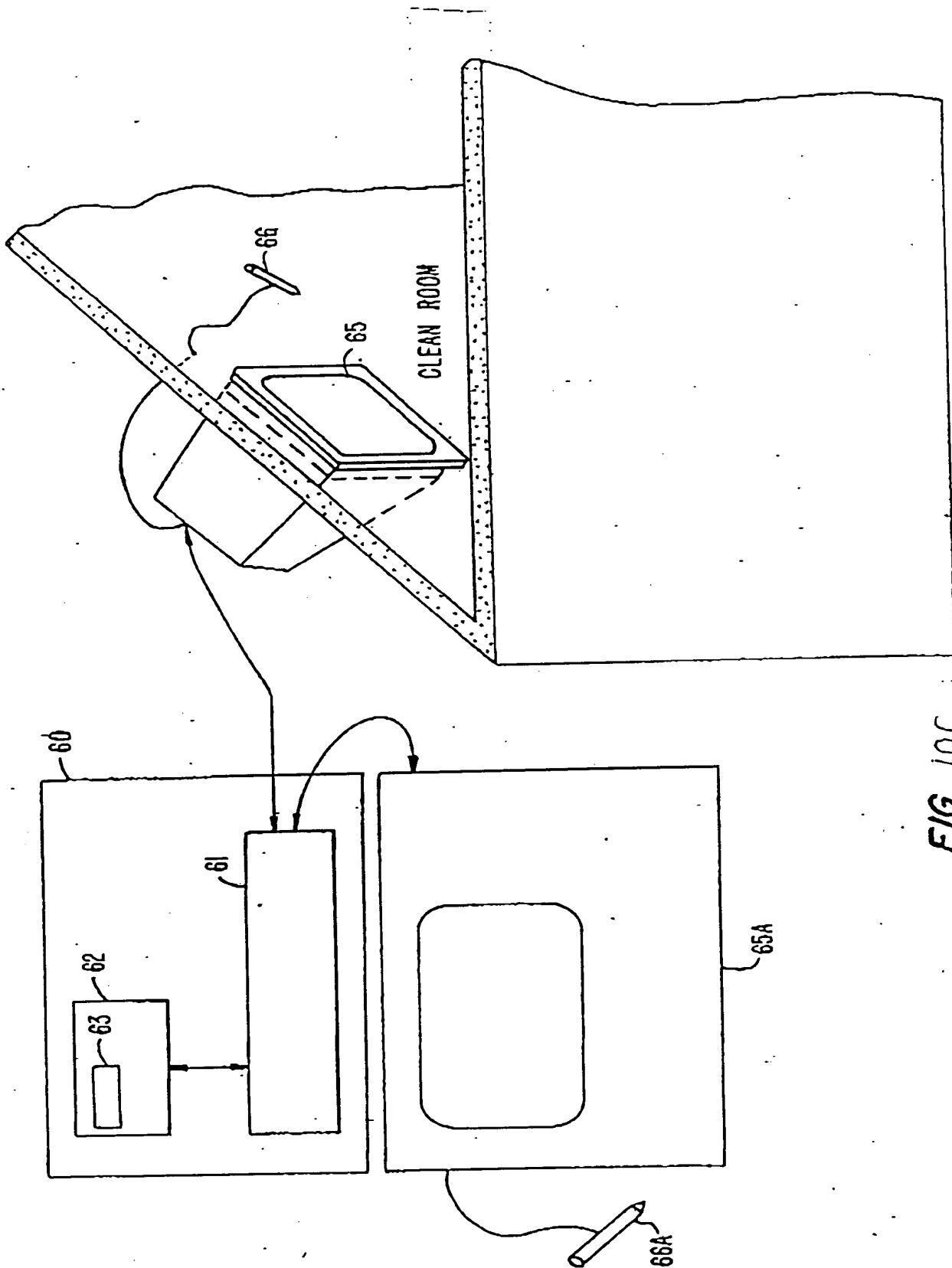


FIG. 10C

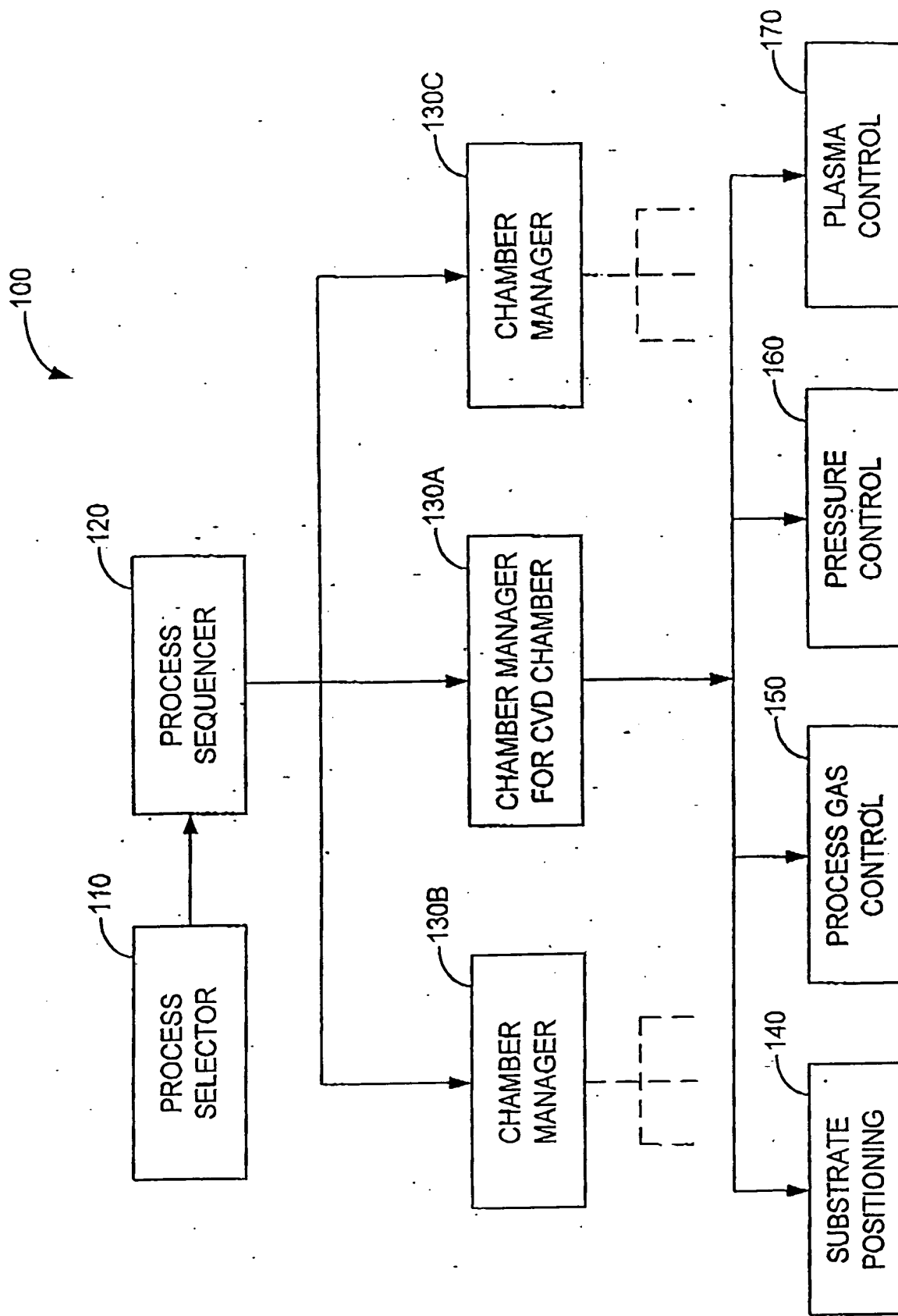
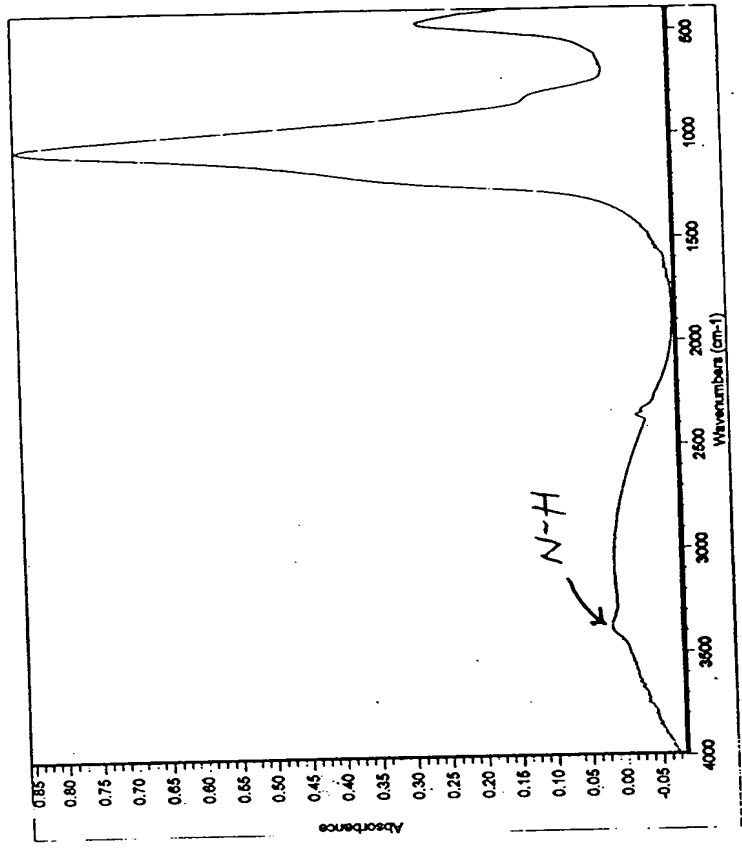


FIG. 10D

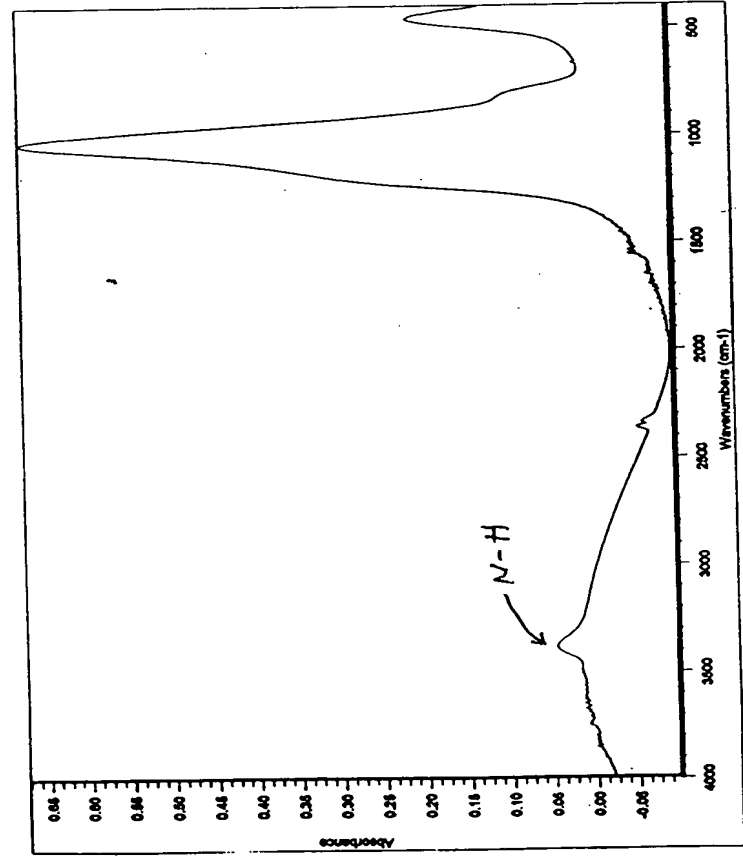
0.85 0.80 0.75 0.70 0.65 0.60 0.55 0.50 0.45 0.40 0.35 0.30 0.25 0.20 0.15 0.10 0.05 0.00 -0.05

RI = 1.57



HDP CVD

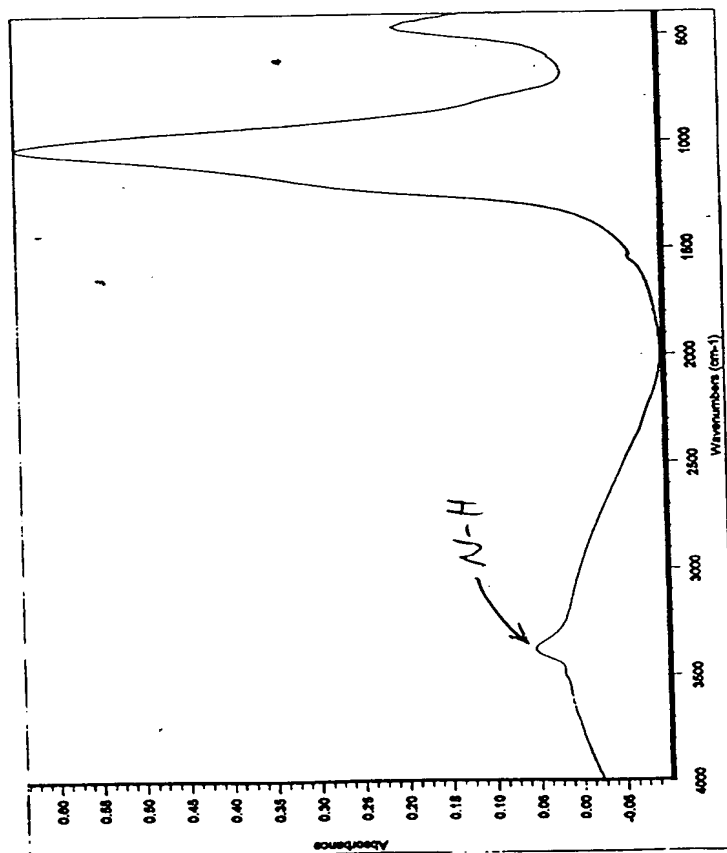
Fig 11B



PE CVD

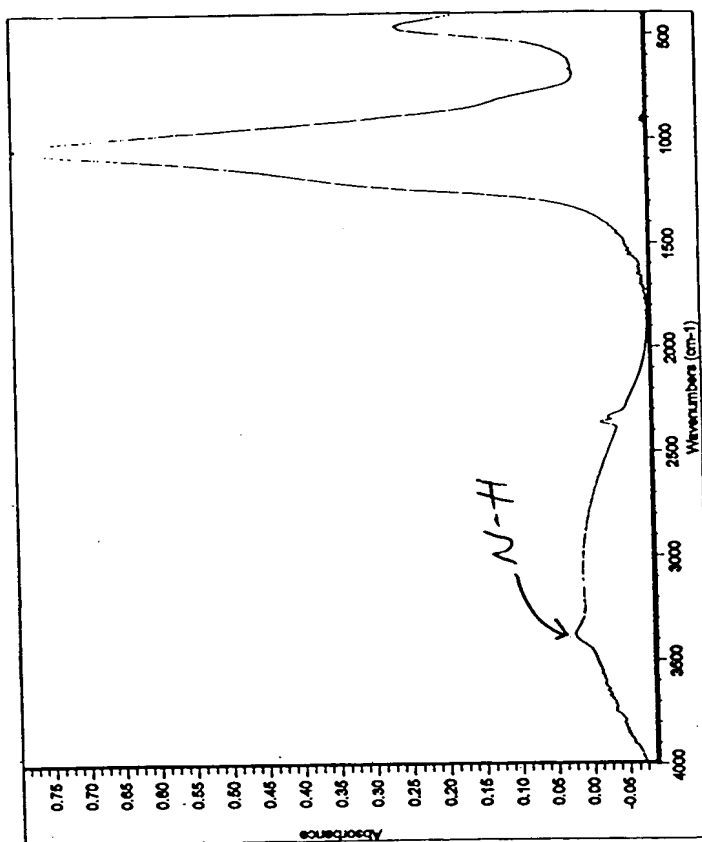
Fig 11A

RI = 1.59



PE CVD

Fig 11C



HDP CVD

Fig 11D

[illegible]

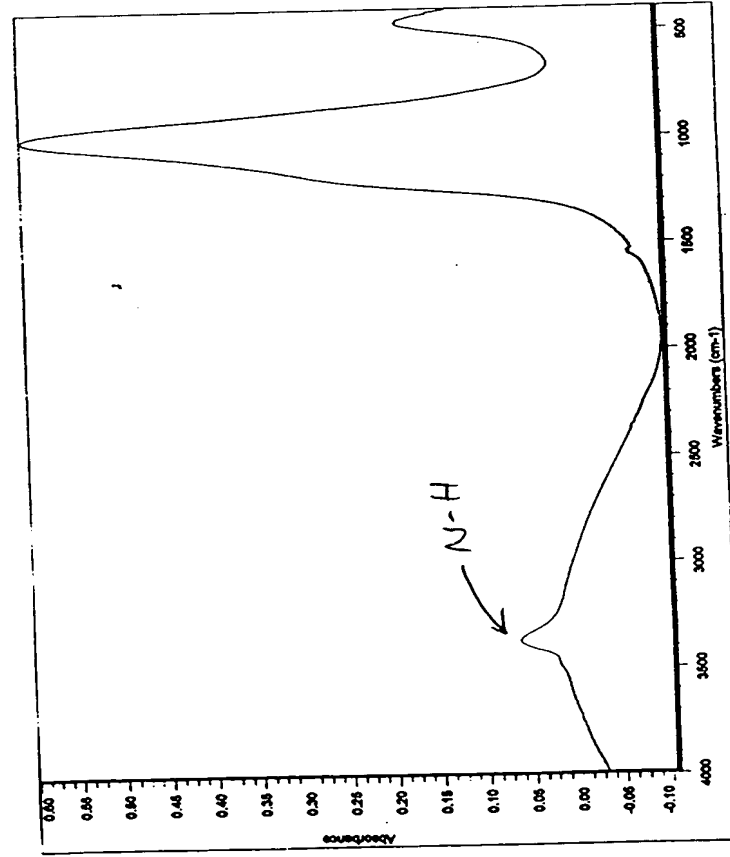
4.9



Fig 11

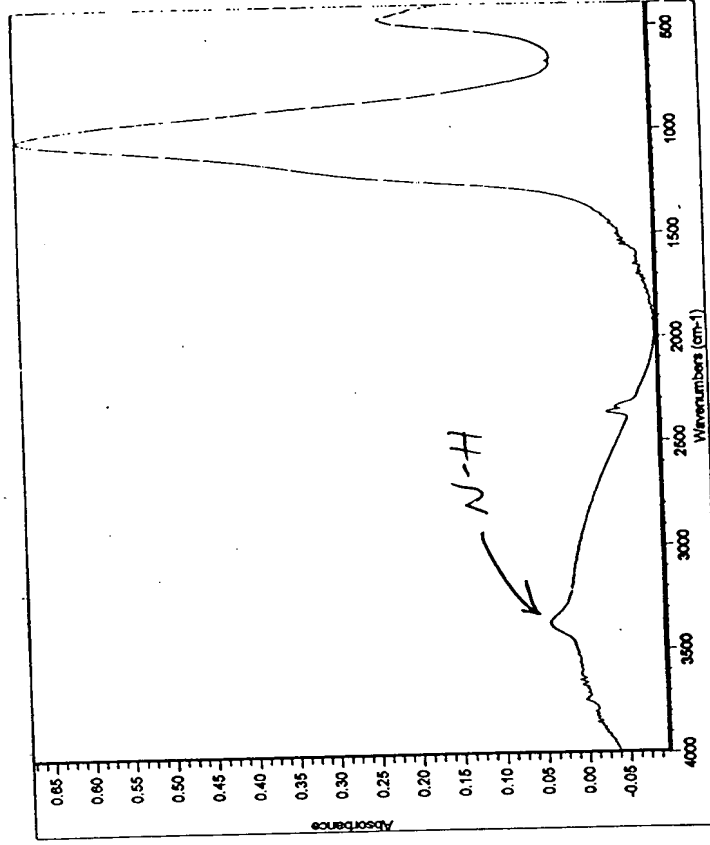
Figure 116 shows the infrared spectrum of the sample. The x-axis represents the wavenumber in cm<sup>-1</sup>, ranging from 4000 to 500. The y-axis represents the absorbance, ranging from 0.00 to 0.85. A broad absorption band is observed around 3400 cm<sup>-1</sup>, and a sharp peak is visible at approximately 1700 cm<sup>-1</sup>.

RI = 1.63



PE CVD

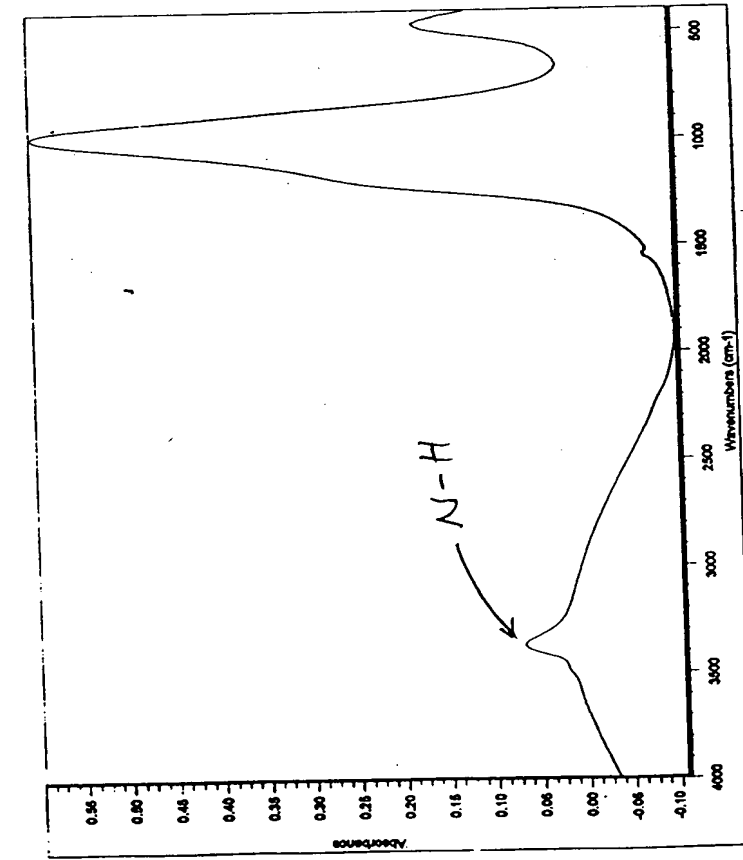
Fig 116



HDP CVD

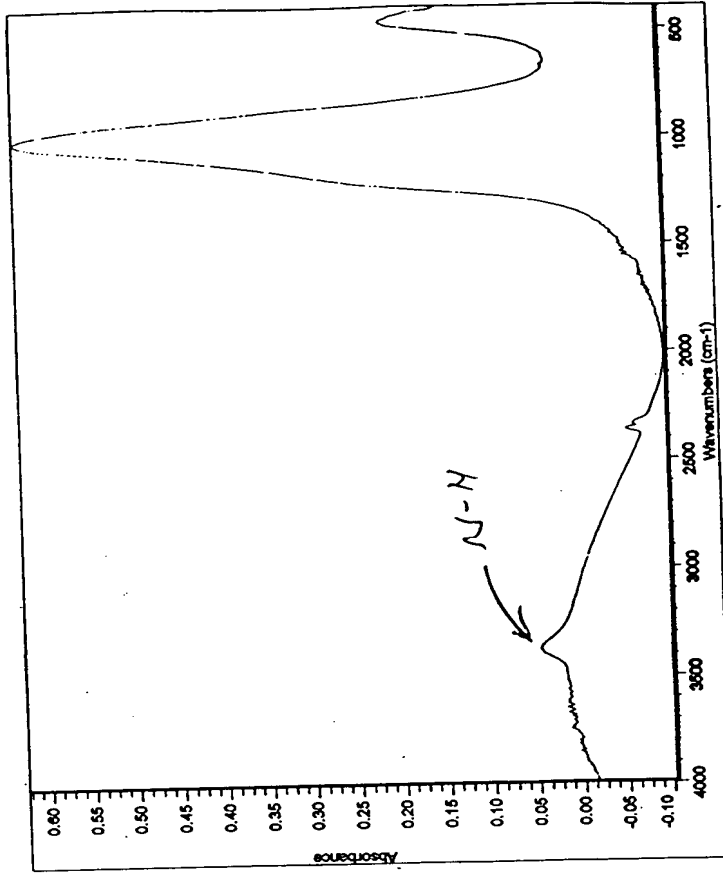
Fig 117

RI = 1.65



PE CVD

Fig 11I



HDP CVD

Fig 11J



# HDP SiON RI=1.57

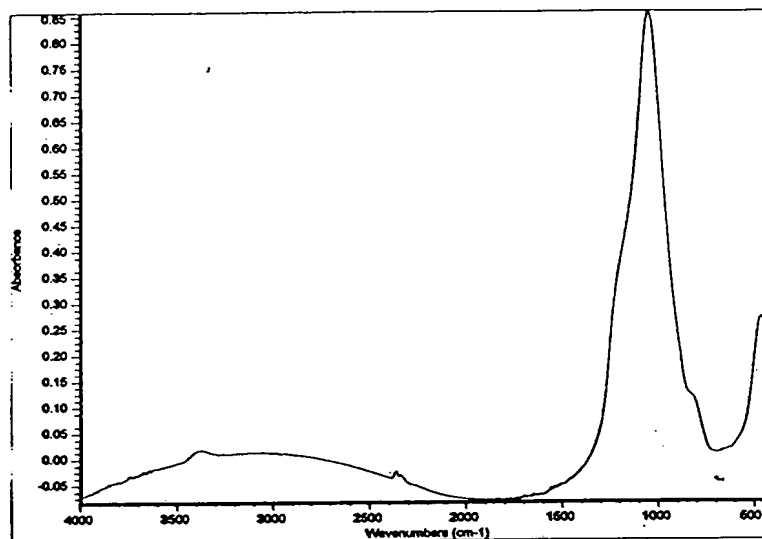


Fig 12A

# HDP SiON RI=1.57 (ANN)

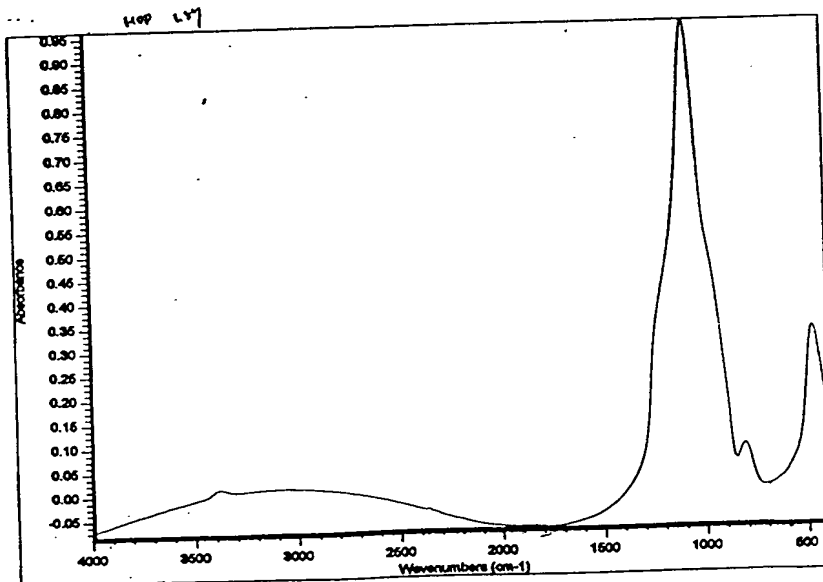


Fig 12B

# HDP SiON RI=1.59

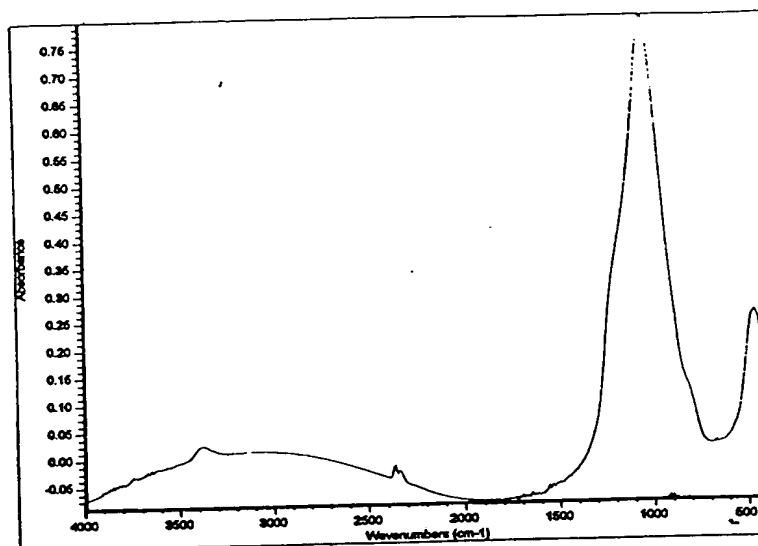


Fig 12C

# HDP SiON RI=1.59 (ANN)

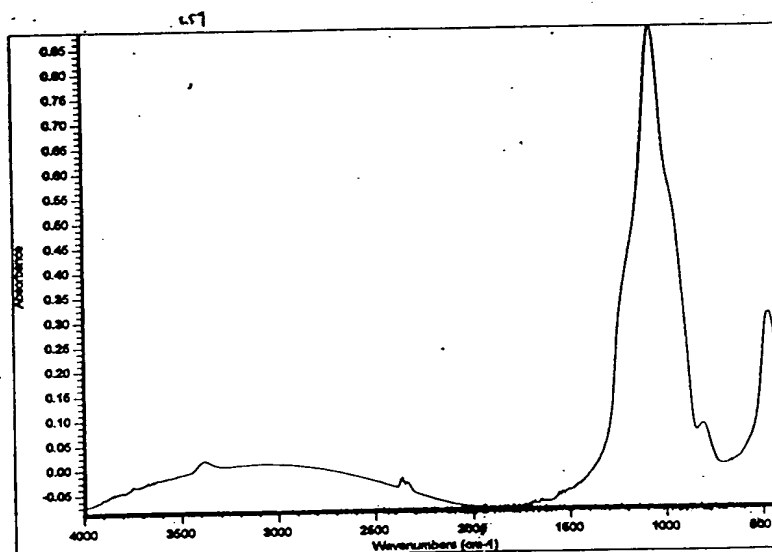


Fig 12D

# HDP SiON RI=1.61

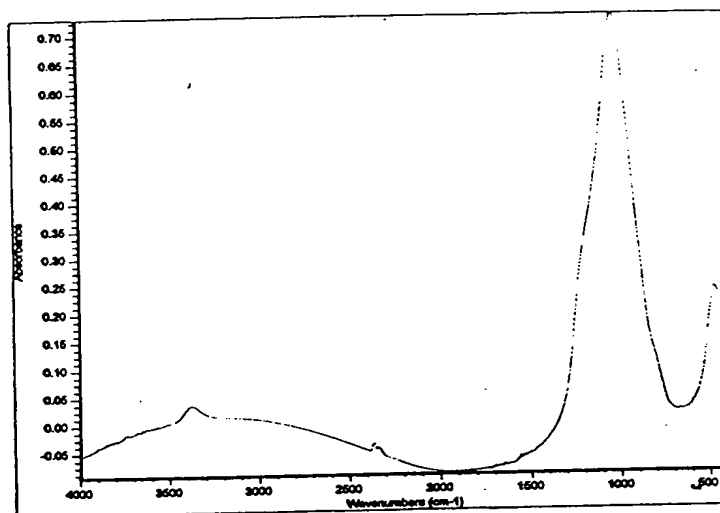


Fig 12E

# HDP SiON RI=1.61 (ANN)

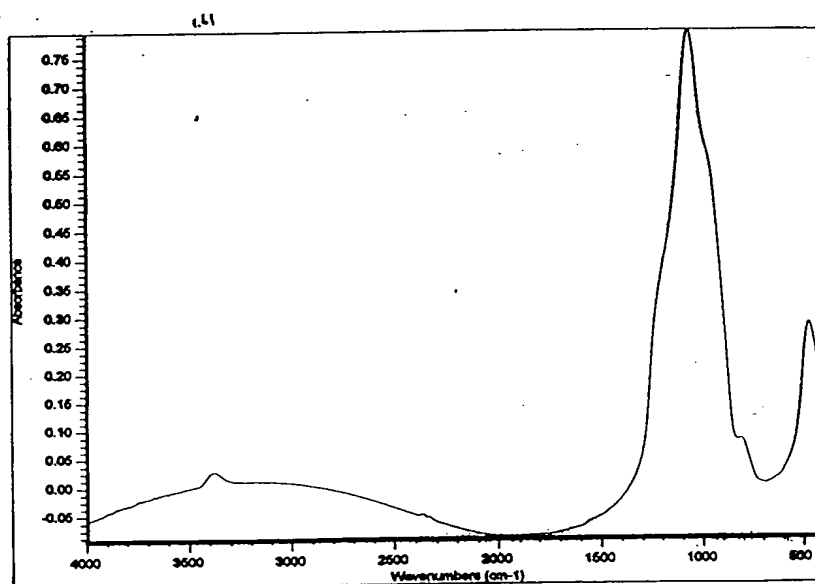


Fig 12F

# HDP SiON RI=1.63

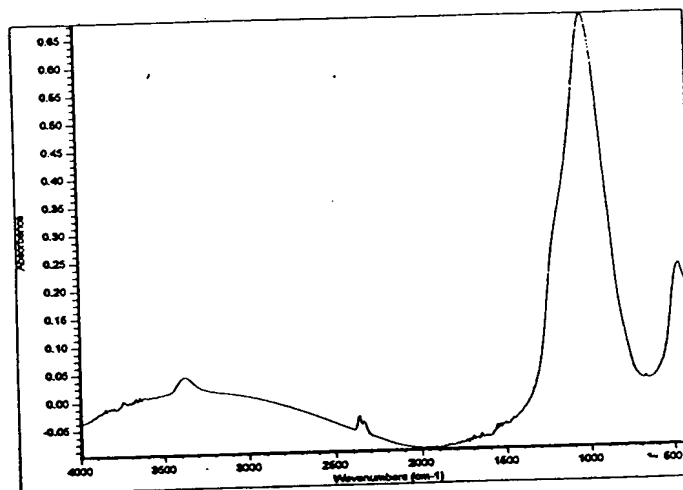


Fig 12G

# HDP SiON RI=1.63 (ANN)

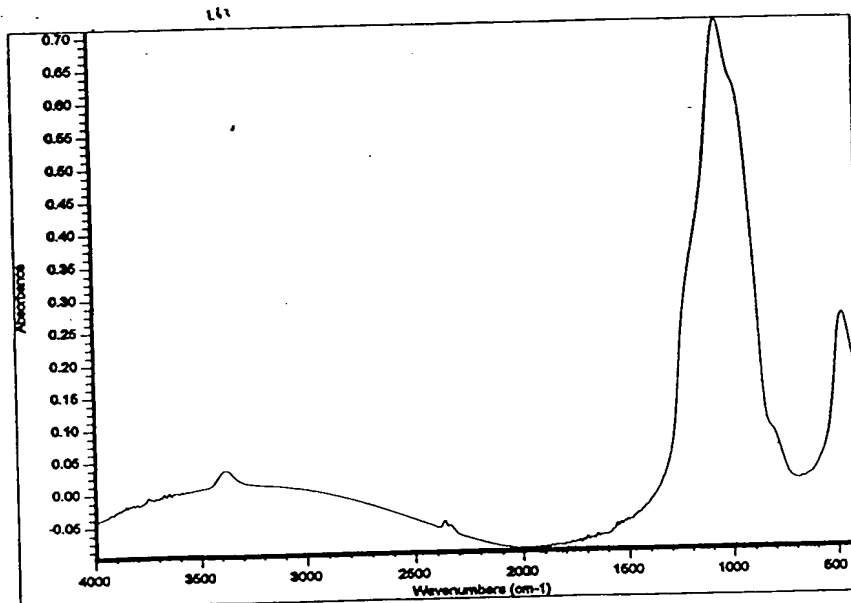


Fig 12H

## HDP SiON RI=1.65

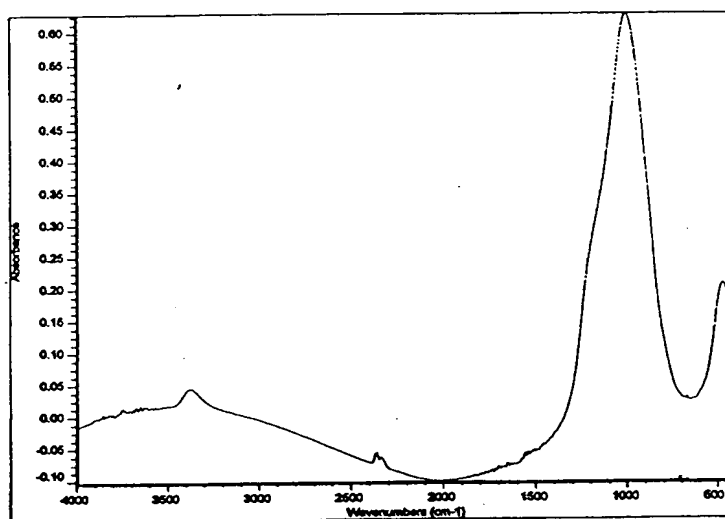


Fig 12I

## HDP SiON RI=1.65 (ANN)

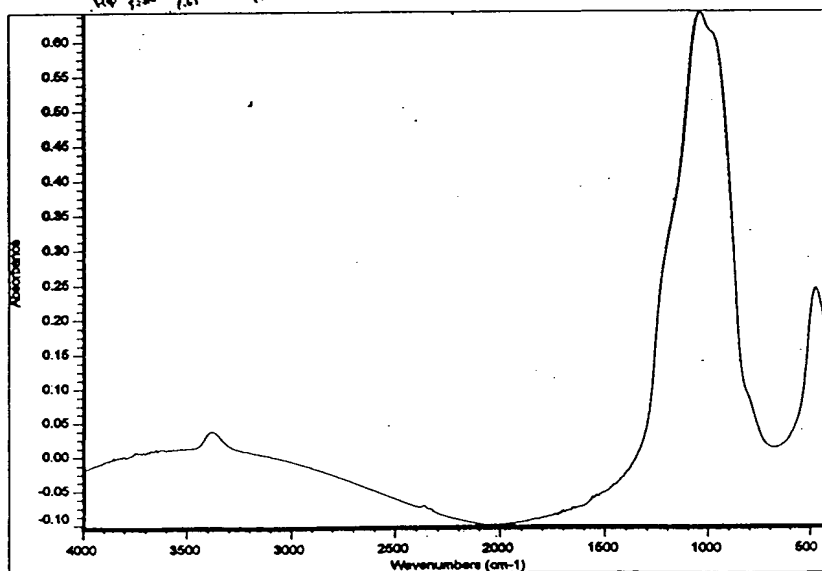


Fig 12J